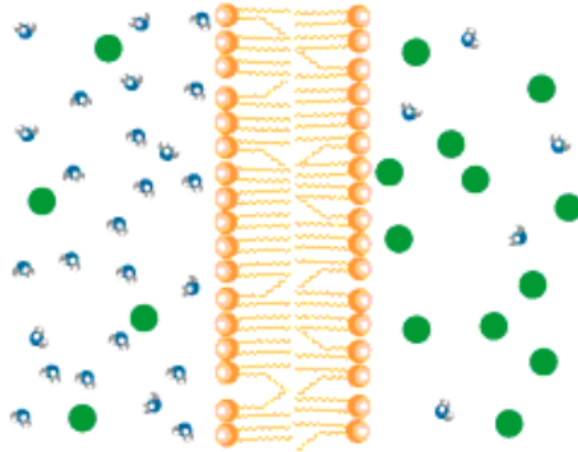


Passive Transport

Does not require energy

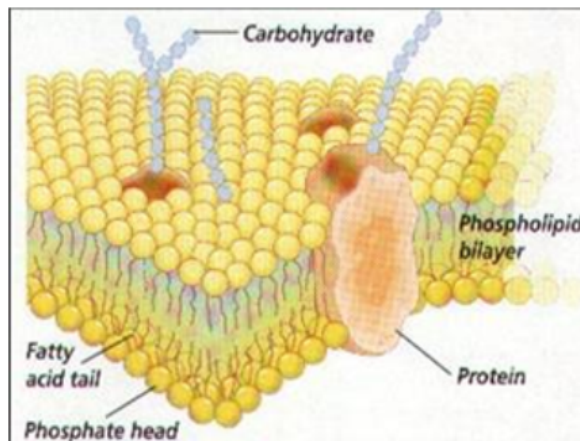


Review

Cell membranes help organisms maintain **homeostasis**

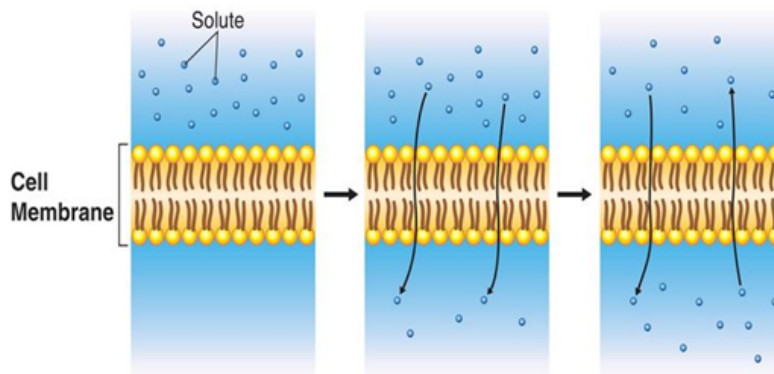
To stay alive, a cell must exchange materials such as food, water, & wastes with its environment

The Cell Membrane is **semipermeable or selectively permeable** only allowing certain molecules to pass through



Passive transport

- The movement of substances across the membrane without the use of energy is known as **passive transport**



Simple Diffusion

- The process by which molecules spread from areas of high concentration, to areas of low concentration. When the molecules are even throughout a space - it is called **EQUILIBRIUM**
- The difference in the concentration of molecules across a membrane is called a **concentration gradient**
- When a concentration gradient no longer exists, **equilibrium** has been reached but **molecules will continue to move equally back & forth across a membrane**



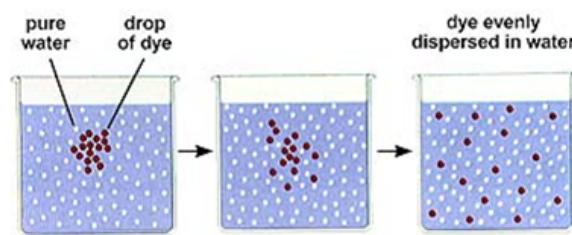
High
concentration

Low
concentration



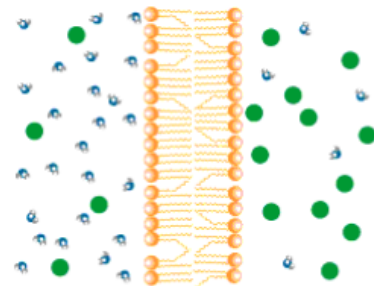
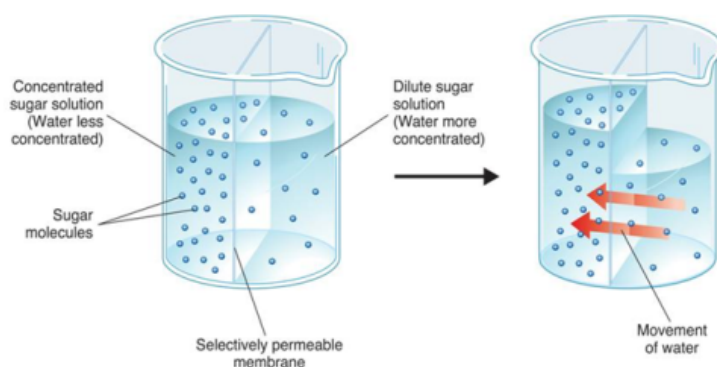
Diffusion

- The rate of diffusion depends on **temperature, size of the molecules, & type of molecules diffusing**
- Molecules diffuse faster at higher temperatures than at lower temperatures



Osmosis

- The diffusion of **water** across a semipermeable membrane is called **osmosis**
- Movement of water is **down its concentration gradient** & doesn't require extra energy



How cells deal with Osmosis

The cells of animals on land are usually in isotonic environment (equilibrium)

Freshwater organisms live in hypotonic environments so water constantly moves into their cells

Unicellular freshwater organisms use energy to pump out excess water by **contractile vacuoles**

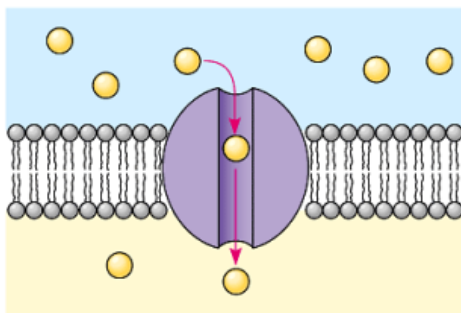
Plant cell walls prevent plant cells from bursting in hypotonic environments

<http://www.youtube.com/watch?v=pahUt0RCKYc&feature=related>



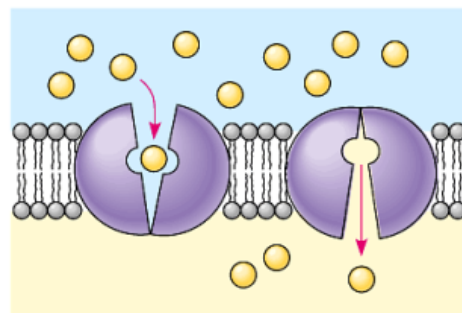
Facilitative diffusion

The movement of specific molecules across cell membranes through **protein channels**.



(a)

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(b)